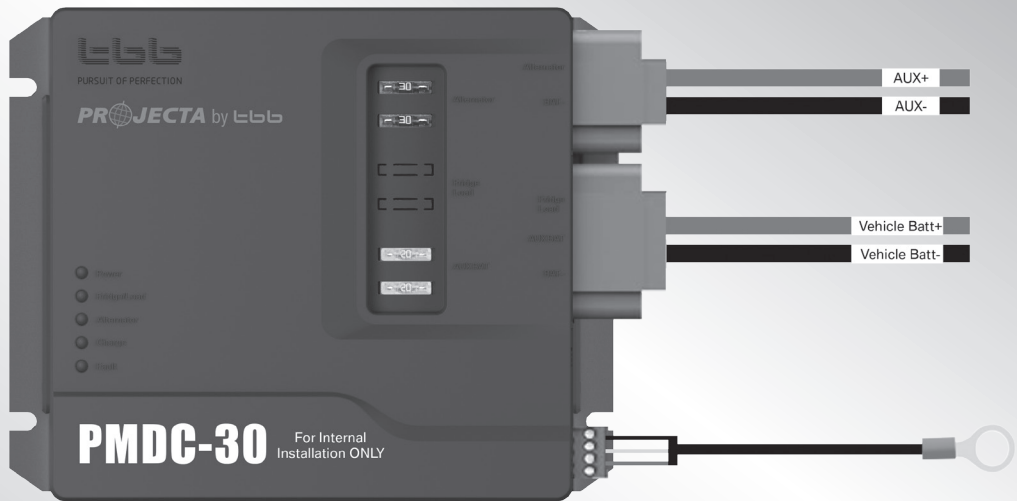


# INTELLI *Jay*

## DC-DC CHARGER (Intelli-Jay Integration)





## 1. GENERAL & SAFETY INFORMATION

This section contains important safety and operation instructions. Please read and retain this manual for future reference.

The PMDC-30 should be installed by a qualified Auto Electrician with knowledge of caravan electrical systems. The following recommendations are to be conducted prior to installation:

- The unit **MUST** not be disassembled for Safety and Warranty reasons.
- PMDC-30 is designed for internal installation **ONLY**.
- Recommended cable size for input and output connections to unit is minimum 6mm<sup>2</sup>.  
Output charging current of the PMDC-30 charge booster will depend on wire size of the auxiliary circuits in the Charging Vehicle and Caravan.
- Check and verify the input voltage is within the specifications of the unit. (Refer to Specification table)
- Check and confirm the circuit connections to the Alternator or Vehicle battery and Input to the Intelli-Jay transformer polarities are correct.
- Use the shortest possible cable lengths to connect the Input and Output circuits to the unit.
- Ensure there's sufficient ventilation around the heatsink of the unit

## 2. INTRODUCTION

### 2.1 GENERAL INTRODUCTION

The PMDC-30 is a 30 Amp output DC to DC charger, designed to be integrated with the Intelli-Jay battery management system.

It comes with stripped & tinned, labelled input and output wiring, for ease of installation.

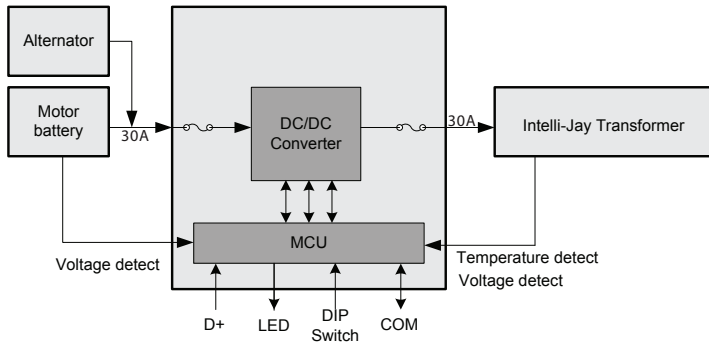
#### FEATURES

- Non-isolation design with max efficiency 96%.
- Euro-6 engine (Smart alternator) compatible
- Built in multi-stage charging algorithm.
- Built-in automatic temperature and voltage compensated charging
- Plug and Play for easy installation
- Built-in fuse protection
- Built-in Heat Sink for cooling
- RS485 communication port for future options and upgrades
- Protection against input/output over voltage, output over current, output short circuit, internal over temperature, battery over temperature
- With adjustable current outputs 15A/20A/25A (Default)/30A via Dip Switches 1 & 2
- With selectable Battery Type via Dip Switches 3 & 4



## 2.2 BLOCK DIAGRAM

*Figure 2-1: Block Diagram of PMDC-30*



The charging efficiency of the PMDC-30 is up to 96%.

PMDC-30 also supports communication of RS485.



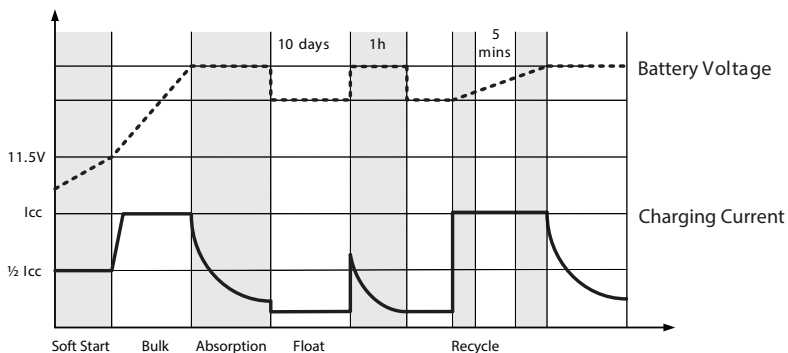
PMDC-30 will treat it as conventional engine rather than Euro 6 engine.

Alternator type	Alternator input voltage	Working state
Conventional alternator	12.8V	ON
	12.0V	OFF

### 2.3 MULTI STAGE CHARGING ALGORITHM

PMDC-30 is able to charge House battery through the Intelli-Jay transformer quickly and fully. Microprocessor controlled charging algorithm with variable absorption charging timer to guarantee the optimal charging for batteries of different discharged states.

*Figure 2-2: Charging Algorithm*





## 2.4 BATTERY TEMPERATURE COMPENSATION

Battery temperature is a key factor in correct charging, the charging formula must be adjusted (automatically and in real time) according to the actual battery temperature to ensure that battery are fully charged but not overcharged or undercharged. All charging voltages recommended by battery manufacture are in fact only applied at 20°C – 25°C.

The BTS (Battery Temperature Sensor) terminated to PMDC-30 measures the temperature of battery and automatically makes adjustments at real time to properly charge your batteries at the default compensation rate of -3mv/°C/cell.

If the BTS is not present/connected, the PMDC-30 will use 25°C as default setting.

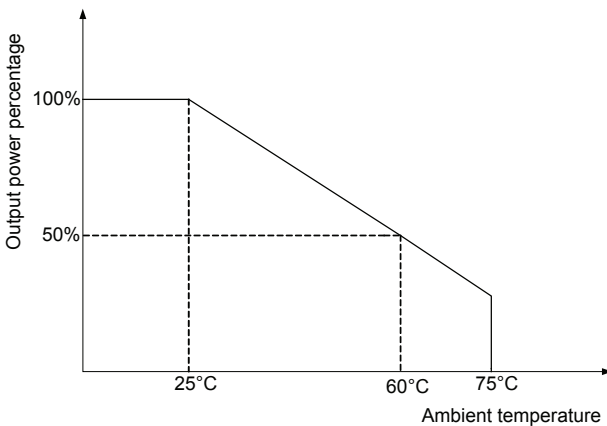
*Figure 2-3: Battery Temperature Sensor (BTS)*



## 2.5 DE-RATE CURVE AGAINST TEMPERATURE INCREASE

PMDC-30 will monitor internal temperature to decide output power. It will de-rate its output power against temperature increasing. Below is a curve to reflect the change of output power with temperature increase.

*Figure 2-4: De-rate curve against temperature increase*





### 3. STRUCTURE AND DIMENSION

#### 3.1 EXTERIOR AND DIMENSION

Figure 3-1: PMDC-30 front view

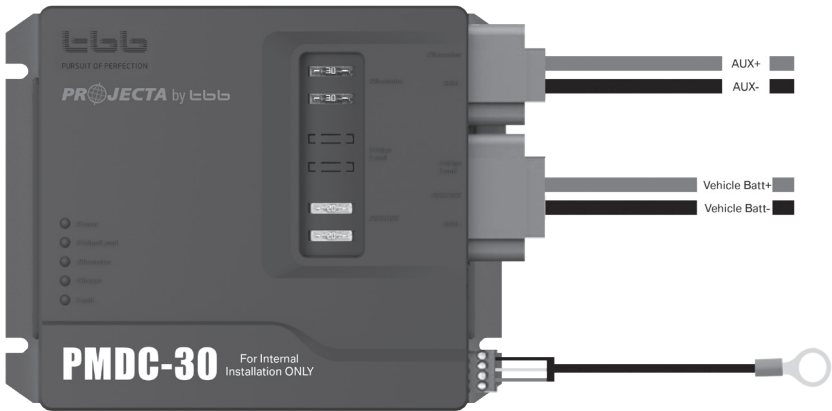
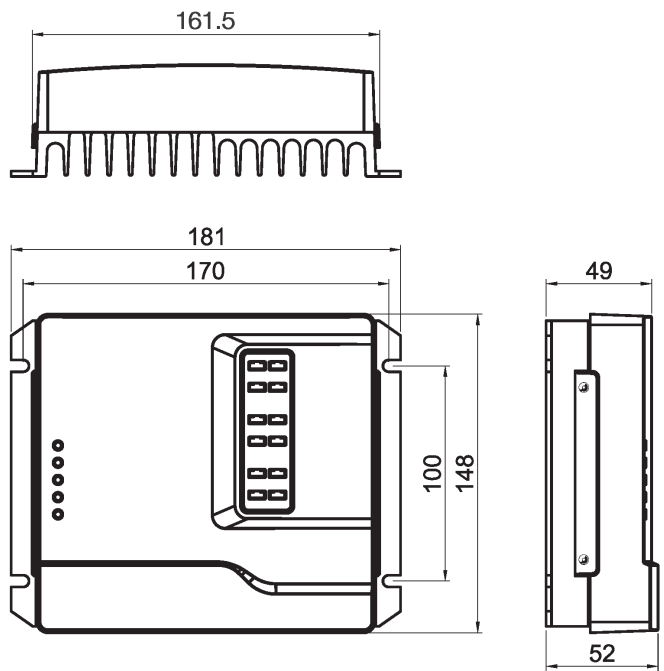


Figure 3-2: PMDC-30 dimensions





### 3.2 CONNECTORS AND TERMINALS

Figure 3-3: Connectors and terminals

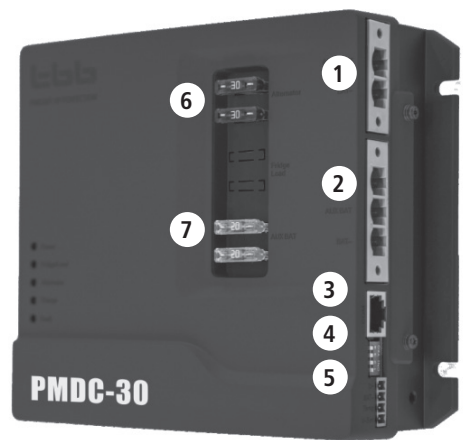


Table 3-1: Connectors and terminals guide

No.	Print	PMDC-30	Remarks	Circuit colours and labelling
1	Alternator	Connects to positive of Alternator	Or connects to positive of motor battery	Red + Label "Aux+"
	BAT-	Connects to negative of Alternator	Or connects to positive of motor battery	Black – Label "Aux-"
2	AUX BAT	Connects to positive of auxiliary battery	Connect to IntelliJay	Red + Label "Vehicle Batt+"
	BAT-	Connects to negative and negative of auxiliary battery	Connect to IntelliJay	Black – Label "Vehicle Batt-"
3	COM	For communication of RS485	Not Connected	
4	1	Dip switch for output current setting	Details of setting can be found as Chapter 4.6	
	2			
	3	Dip switch for battery type setting		
	4			
5	BAT-	Connects to BTS' black cable	For battery temperature sensing	RED Ring Terminal connect to Battery +ve
	Temp	Connects to BTS' white cable		
	V-Sen	Connects to BTS' red cable	For voltage sensing	

Table 3-2: Fuse specification

No.	Print	Specification	Colour	Quantity	Protection for
6	Alternator	30A/32VDC for PMDC-30	Amber	2	Input from alternator
7	AUX BAT	20A/32VDC	Yellow	2	Output to charge auxiliary battery



### 3.3 STATUS INDICATORS

Table 3-3: LED codes

No.	Print	Colour	Status	Description
1	Power	Green	ON	Working normal
			OFF	No working or Low Power Mode
3	Alternator	Green	ON	Motor battery voltage in the range
			Flashing	Motor battery voltage high
			OFF	Motor battery voltage low
4	Charge	Green	ON	Charging battery at bulk or absorption stage
			Flashing	Charging battery at float stage
			OFF	No charging to auxiliary battery
5	Fault	Red	ON	1. PMDC-30 over temperature 2. Motor battery voltage high 3. Output to auxiliary battery short circuit
			Flashing	1. Auxiliary battery over temperature or under temperature
			OFF	No fault

## 4. INSTALLATION

### 4.1 MATERIAL CHECKING

Before installation, check that the product is in good physical condition.



**Please check the item with the list attached in the box.**

### 4.3 PROPER INSTALLATION LOCATION

- PMDC-30 is designed with IP20 and for internal installation ONLY.
- The temperature at the casing and heat sink of PMDC-30 can be as high as 60°C during operation.
- Ensure PMDC-30 is installed away from flammables and explosives.
- Please have the installation away from inflammable and explosive goods.
- Ensure PMDC-30 is installed out of reach of children.
- Ensure mounting surface is flat and rigid.



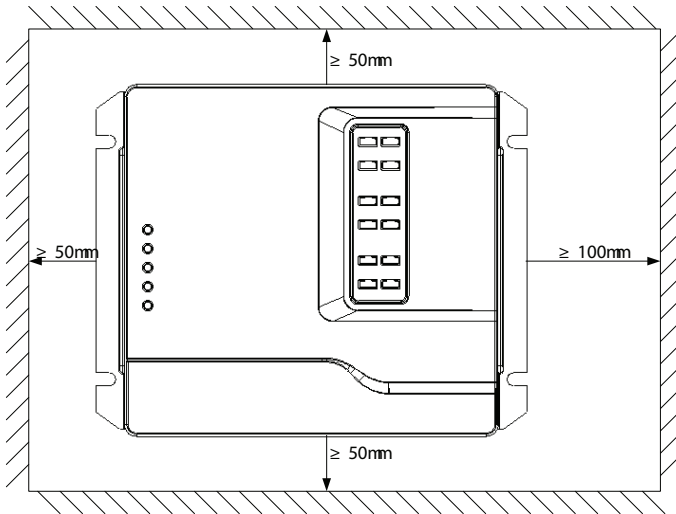
**Never install PMDC-30 in a sealed enclosure with battery.**



#### 4.4 INSTALLATION SPACE

For adequate ventilation, it is important to leave space around where the PMDC-30 is installed. See recommended spacing dimensions below.

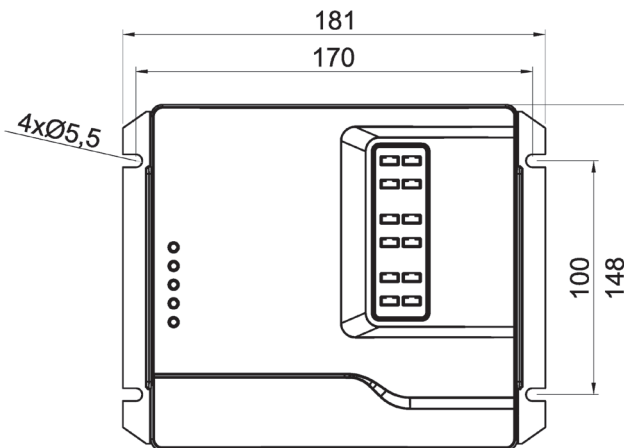
*Figure 4-1: The required dimensions for ventilation*



#### 4.5 MOUNTING HOLES

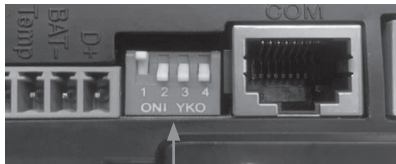
Find an appropriate mounting surface, flat and rigid. Drill mounting holes per the dimensions below.

*Figure 4-2: Drill holes for mounting*





# 4.6 DIP SWITCH SETTING



Dip Switches  
Set output current and battery type  
UP = OFF      DOWN = ON

Table 4-1: Dip switch setting for output current

Output Current settings		
Pin 1	Pin 2	Charge current (Max Amps)
OFF	OFF	30
OFF	ON	25 (Default)
ON	OFF	20
ON	ON	15

Table 4-2: Dip switch setting for battery type

Dip switch for battery type setting		Battery type	Absorption charging voltage	Float charging voltage
Pin 3	Pin 4			
OFF	OFF	AGM	14.6V	13.5V
OFF	ON	GEL	14.2V	13.8V
ON	OFF	LFP	14.4V	13.5V
ON	ON	WET (Default setting)	14.8V	13.8V



Do not connect PMDC-30 to AC Mains



Please ensure the connections are tight and have correct polarity.  
Damages caused by improper installation may void warranty.



## 6. SPECIFICATION

Model Number	PMDC-30
<b>Electrical</b>	
Alternator input voltage range (Intelligent type)	12~16VDC
Automatic activation D+	Yes
Absorption charge voltage	Default Setting: 14.8VDC
Float charge voltage	Default Setting: 13.8VDC
Charge current	30A
Total current of load and charging	30A
Maximum charging efficiency	96%
Temperature compensation	Default Setting: -3mV/°C/cell
Voltage compensation	Yes
Charge algorithm	Premium II multi stage
Protection	<ul style="list-style-type: none"> <li>• Battery charger over temperature</li> <li>• Over load</li> <li>• Short circuit</li> </ul>
Communication	RS485, RJ45 connector
Storage temperature	-40°C ~70°C
Operating temperature	-40°C ~70°C
<b>Enclosure</b>	
Battery Connection	Cable with connector
Protection category	IP20
Weight	1.0kg
Dimensions (h*w*d)	181*148*52mm
<b>Standards</b>	
Emission	ECE 10R-06, EN61000-6-1, EN61000-6-3



**NOTES**



# WARRANTY STATEMENT

Brown & Watson International Pty. Ltd. ("BWI") of 1500 Ferntree Gully Road, Knoxfield, Vic., telephone 1800 294 294, warrants that all products described in its current catalogue will under normal use and service be free of failures in material and workmanship for a period of three (3) year from the date of the original purchase by the customer as marked on the invoice (see elsewhere for specific warranty period). This warranty does not cover ordinary wear and tear, abuse, alteration of products or damage caused by the purchaser.

To make a warranty claim the consumer must deliver the product at their cost to the original place of purchase or to any other place which may be nominated by either BWI or the retailer from where the product was bought in order that a warranty assessment may be performed. The consumer must also deliver the original invoice evidencing the date and place of purchase together with an explanation in writing as to the nature of the claim.

If the claim is determined to be for a minor failure of the product then BWI reserves the right to repair or replace it at its discretion. If a major failure is determined the consumer will be entitled to a replacement or a refund as well as compensation for any other reasonably foreseeable loss or damage.

This warranty is in addition to any other rights or remedies that the consumer may have under State or Federal legislation.

## IMPORTANT NOTE

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

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